Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BARRY C. MUFFOLETTO,
ASHISH SHAH and DONALD H. STEPHENSON

Appeal No. 2002-2221
Application No. 08/847,946

ON BRIEF

Before WALTZ, LIEBERMAN and JEFFREY T. SMITH, ***Administrative Patent Judges***.

JEFFREY T. SMITH, ***Administrative Patent Judge.***

DECISION ON APPEAL

Applicants appeal the decision of the Primary Examiner finally rejecting claims 1 to 12, all of the pending claims in the application. We have jurisdiction under 35 U.S.C. § 134.[1]

[1] Claims 14 and 15 have been withdrawn from consideration by the Examiner. (Final Rejection, paper no. 8).

BACKGROUND

Appellants' invention relates to treating metals, metal alloys and metal oxides to enhance their electrical conductivity. According to Appellants, metal and metal alloys have a native oxide present on the surface which acts as an insulating layer. (Specification, p. 5). Claims 1 and 9, which are representative of the claimed invention, appear below:

> 1. A method of improving electrical conductivity of metals, metal alloys and metal oxides in making an electrode comprising:
>
> a) providing a substrate having an electrically insulating native oxide layer on a surface thereof, said substrate being selected from the group consisting of Group IVA, Group VA, Group VIA metals, aluminum, manganese, nickel, copper and stainless steel;
>
> b) depositing on said native oxide layer a metal selected from the group consisting of Group IA and Group VIIIA metals;
>
> c) directing a high energy beam onto said deposited metal and said native oxide layer to intermix the deposited metal with the native oxide;
>
> d) controlling the depth of intermixing of the deposited metal with the native oxide so as not to affect the bulk structure of said substrate;
>
> e) whereby said native oxide layer is changed from being electrically insulating to being more electrically conductive; and
>
> f) applying electrode material onto the native oxide layer so that the substrate is usable as an electrode.
>
> 9. A method of improving electrical conductivity of metals, metal alloys and metal oxides in making an electrode comprising:

a) providing a substrate having an electrically insulating native oxide layer on a surface thereof, said substrate being of a material operative for use as an electrode in a capacitor;

b) depositing on said native oxide layer a metal selected from the group consisting of Group IA and Group VIIIA metals;

c) directing a high energy beam onto said deposited metal and said native oxide layer to intermix the deposited metal with the native oxide;

d) controlling the depth of intermixing of the deposited metal with the native oxide so as not to affect the bulk structure of said substrate;

e) whereby said native oxide layer is changed from being electrically insulating to being more electrically conductive; and

f) applying electrode material onto the native oxide layer so that the substrate is usable as an electrode.

CITED PRIOR ART

As evidence of unpatentability, the Examiner relies on the following reference:

Draper et al. (Draper)	4,495,255	Jan. 22, 1985

The Examiner rejected claims 1 to 12 as unpatentable under 35 U.S.C. § 103(a) as obvious over Draper. (Answer, p. 3).[2]

DISCUSSION

[2] The Examiner has indicated that the rejection under 35 U.S.C. § 102 has been withdrawn. (Answer, p. 2).

We have carefully reviewed the claims, specification and applied prior art, including all of the arguments advanced by both the Examiner and Appellants in support of their respective positions. This review leads us to conclude that the rejection of claims 1 to 12 is not well founded. We will limit our discussion to the independent claims 1 and 9.

Rather than reiterate the respective positions advanced by the Examiner and Appellants, we refer to the Examiner's Answer and to Appellants' Brief for a complete exposition thereof.

Draper is directed to a method of surface alloying. The method comprises the steps of depositing a very thin metallic coating material (e.g., gold) on a metallic substrate (e.g., nickel). A short radiant energy pulse is directed at the coated substrate to melt portions of the coating and the substrate there below. The radiant energy pulse is then removed to cool and resolidify the metallic as an alloyed material. Electrical connectors fabricated by the disclosed method have an electrical contact area thereon wherein the contact area is an alloy of a very thin metallic film. (Col. 2, ll. 8 to 23). Draper discloses a radiant energy-absorbing cap (e.g., palladium) was deposited on a nickel substrate having a gold coating thereon. (Col. 5, ll. 7 to 18).

Draper differs from the invention of claims 1 and 9 in that the radiant energy pulse used to apply the coating material melts portions of the coating and the substrate there

below. That is, the radiant energy pulse used to apply the coating material affects the bulk structure of the substrate. The Examiner acknowledges that the substrate is affected by the application of the coating material. Specifically the Examiner states "only a small portion of the substrate is affected and the beam is controlled." (Answer, p. 4). The Examiner does not suggest a remedy or direct us to evidence that remedies this deficiency in Draper.

We are cognizant that the metal layer contains a native oxide layer on the surface. The present record does not indicate the thickness of the oxide layer. It is possible that the oxide layer is the only layer that is affected by the radiant energy pulse used in Draper. However, the Examiner has not made this assertion nor has the Examiner directed us to evidence which would support this position.

For the foregoing reasons, we determine that the Examiner's conclusion of obviousness is not supported by facts. "Where the legal conclusion [of obviousness] is not supported by facts it cannot stand." ***In re Warner,*** 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967). Accordingly, the Examiner"s rejection of claims 1 to 12 over Draper is reversed.

REVERSED

THOMAS A. WALTZ ***Administrative Patent Judge***	)	
PAUL LIEBERMAN ***Administrative Patent Judge***	)	**BOARD OF PATENT APPEALS AND INTERFERENCES**
JEFFREY T. SMITH ***Administrative Patent Judge***	)	

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